

REMARKS

Upon entry of the claim amendments, Claims 1-6, 8-17, and 19-28 will be all the claims pending in the application.

Amended Claim 1 is supported by the description in the specification at, for example, the paragraph bridging pages 10 and 11, page 11, lines 15-16, page 26, line 9, and page 38, lines 7-9.

Amended Claims 5 and 16 find support from, for example, page 19, line 17, through page 21, line 12, of the specification.

Amended Claims 9-10 and 20-21 find support from, for example, page 13, line 14, through page 14, line 5, of the specification.

Amended Claim 24 finds support from, for example, page 11, lines 15-16, page 26, line 10, and page 28, lines 11-14, of the specification.

Claims 3, 6, 11, 14, 17, and 22 were amended to render them consistent with amended Claim 1.

Formerly independent Claims 12, 23, 25, 26, and 27 have been amended so that each now depends from Claim 1.

New Claim 28 finds support from page 11, lines 15-16.

No new matter has been added.

I. Withdrawn Claims

Claims 26 and 27 stand withdrawn from consideration for being drawn to non-elected inventions. Each of Claims 26 and 27 is a method claim which has been amended to depend from Claim 1, such that each of Claims 26 and 27 is now drawn to a method for producing the intermediate board according to claim 1.

Where an applicant elects claims directed to a product, and a product claim is subsequently found allowable, withdrawn method claims which depend from or otherwise include all the limitations of the allowable product claim will be rejoined. MPEP §821.04.

In view of the amendments to Claims 26 and 27, Applicants respectfully request rejoinder of Claims 26 and 27 upon the allowance of Claim 1.

II. Rejection Under 35 U.S.C. § 102

Referring to Section No. 3 at pages 2-4 of the Office Action, Claims 1, 4, 12, 15, 23, and 25 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,255,899 (“US ‘899”).

Applicants respectfully traverse.

Focusing on independent Claim 1, US ‘899 does not disclose or suggest the subject matter recited therein. For example, US ‘899 does not disclose or suggest an intermediate board body comprising a low temperature-firing ceramic which is obtained by firing at a temperature which is lower than 1,000 °C, wherein the low temperature-firing ceramic has a coefficient of thermal expansion which is greater than the coefficient of thermal expansion of the semiconductor device. Thus, US ‘899 does not disclose the claimed intermediate board and therefore does not anticipate the present claims.

The Examiner indicates at page 5 of the Office Action that the process limitation “low-temperature firing” does not carry weight in a claim drawn to structure.

Applicants respectfully disagree. The recitation “low temperature-firing ceramic which is obtained by firing at a temperature which is lower than 1,000 °C” defines a particular class of ceramics, the full scope of which is readily understood by one of ordinary skill in the art. For example, as indicated at page 11, lines 6-16, of the specification, a low temperature firing ceramic may have a coefficient of thermal expansion which is lower than that of alumina and higher than that of aluminum nitride and silicon nitride.

Applicants further comment on patentability of the present claims as follows.

An advantage of the claimed intermediate board is that the claimed low temperature-firing ceramic may have a coefficient of thermal expansion which is smaller than that of the alumina used in prior art intermediate board bodies. Thus, the difference between the coefficient of thermal expansion of the claimed intermediate board body and the coefficient of thermal expansion of the semiconductor device to be mounted on at least one of the first and second faces of the intermediate board body may be reduced, in comparison to the prior art structure using alumina.

Another advantage of the claimed intermediate board body is that the low temperature-firing ceramic has a coefficient of thermal expansion which is greater than the coefficient of thermal expansion of the semiconductor device. Thus, a difference between the coefficient of thermal expansion of the intermediate board body and the coefficient of thermal expansion of the semiconductor package board, which has a larger thermal expansion coefficient, would be reduced.

In contrast, in the case where glass and mullite are added into the intermediate board body, its thermal expansion coefficient is equal to that of the semiconductor device. Applicants refer to Examples 2 and 3 of JP-A-59-996, which has been submitted herewith in an Information Disclosure Statement (IDS).

Thus, the reliability of the connection between the intermediate board and the package board is improved by the claimed intermediate board.

For the foregoing reasons, Applicants request reconsideration and withdrawal of the §102 rejection of Claims 1, 4, 12, 15, 23, and 25.

III. Remainder of the Prior Art Rejections

Referring to Section No. 4 at page 5 of the Office Action, Claims 3, 5, 9-10, 14, 16, and 20-21 are rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over US '899.

AMENDMENT
U.S. Appln. No. 10/802,782

Referring to Section No. 7 at pages 6-9 of the Office Action, Claims 2, 6-7, 11, 13, 17-18, 22, and 24 are rejected under 35 U.S.C. § 103(a) as being unpatentable over US '899 in view of U.S. Patent No. 5,714,800 ("US '800").

Referring to Section No. 8 at page 9 of the Office Action, Claims 8 and 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over US '899 in view of U.S. Patent No. 6,756,685 ("US '685").

Applicants respectfully traverse each of the above §102/§103 and §103 rejections.

Each of the rejected claims now depends from Claim 1.

For the reasons stated at Section II of this Amendment, US '899 does not disclose the claimed intermediate board in the manner required under 35 U.S.C. § 102.

Furthermore, none of US '899, US '800 and US '685 teaches or suggests the desirability of modifying the disclosure of US '899 to arrive at the claimed intermediate board. Furthermore, the advantages of the claimed intermediate board discussed at Section II of this Amendment are completely unexpected from any of US '899, US '800 and US '685, either alone or in combination. Thus, the present claims are also unobvious over the cited prior art, alone or in combination thereof.

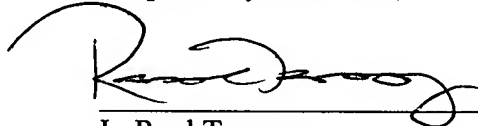
For the foregoing reasons, Applicants request reconsideration and withdrawal of the §102/§103 and §103 rejections.

Reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT
U.S. Appln. No. 10/802,782

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "L. Raul Tamayo", written over a horizontal line.

L. Raul Tamayo
Registration No. 47,125

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Date: November 22, 2005